force, and the two corresponding gravitational systems are well illustrated by problems introduced, throughout the mechanics section, among those on C.G.S. measurements.

This takes us as far as is at present, perhaps, possible in the direction of a compromise to which many teachers of physics are now looking forward—the recognition, namely, of two distinct systems of measurements only; one the C.G.S. with its derived practical system, for scientific and electrical purposes, the other the system used by engineers, and based on the units of length, time, and *force*.

Among other noteworthy features is a good set of problems on dynamos and alternating currents, another on wave and harmonic motions in connection with sound, and a third on gravitational potential in the section on work and energy. Less commendable, however, is the reference to water-levels in connection with electrical potentials. The most perfect "water analogy," and the one which, in our experience, appeals most directly to students, is that in which conductors are represented by water-filled cavities in a large block of india-rubber; it affords, indeed, almost the only means of enabling the average beginner to realise how the potential of a body or of a point in space may be altered by altering the charge on another body at a distance.

It is a pity that those problems which admit of solutions are not all supplied with them. Many are of the nature of examination questions, requiring long answers in words, and to these, naturally, no answers are given; but of the rest, not more than about three-fourths are solved.

We have noticed the following slips. The answers to Nos. 251, 759, 775, 776, 837 are either wholly or partially wrong; in No. 607 the water-worth of the dish should be given; and the headings to pp. 204 and 221 want altering. These are, however, small blemishes on an otherwise very useful work. A. P. C.

COSMIC ETHICS.

Cosmic Ethics; or, the Mathematical Theory of Evolution. By W. Cave Thomas. Pp. xxii + 296. (London: Smith, Elder, and Co., 1896.)

IN styling his book "Cosmic Ethics," Mr. Cave Thomas means to imply that not only in morals as a department of "the wider hygiene," but throughout the universe, there is but one law of rightness, that of balance, proportion, or the mean. By "mathematical evolution" he desires to signify that evolution is "the becoming of the proportioned," its goal being "the at-mean-ment of nature."

Starting from the admitted applicability of the idea of quantity throughout the concrete world, and from the progress which the sciences undoubtedly make when measurement or quantitative formulæ can be used in them, Mr. Thomas advances to an apotheosis of the average, and offers principia of the science of proportion and applications of quantification throughout the whole range of human knowledge. By somewhat elementary numerical formulæ we can determine the beau-idéal in the arts, attain to a quantitative ethic, discover that a man ought to drink neither too much nor too little, that his morning tub should not vary much in temperature from that of the human body, that the combination of great athletic and great intellectual effort leads to a break-down, and that technical and specialist education is inferior to general education.

Of the principia we may quote as an instance: "*The mean of fraction* is $\frac{1}{2}$; it is the fraction which is equally indifferent to the two extreme fractional limits of $\frac{1}{1}$ and $\frac{1}{0}$." (!) Of the exemplifications of the formulæ, we may point out that they are purely arbitrary. We ought to aim, we are told, at not diverging from the average, which is the ideal, to any extent which carries us beyond the middle third of our scale. Why not the middle fifth or seventh? There is no attempt to point out how the qualitative kind to which any particular scale is applicable is determined, and this despite of the fact that in a quotation which he makes from Reynolds—one of a constantly recurring set of quotations—that point is definitely raised.

Mr. Thomas accepts the Darwinian theory, though how the importance which that theory ascribes to "accidental variations" from type, can be reconciled with his own views as they stand, it is difficult to see. In fact, as they are here put before the reader, Mr. Thomas's doctrines will not allow of being harmonised into an intelligible system. This is the more to be regretted, as there is no doubt that an adequate elucidation of the theory of quantity, number, and measurement, would be of very great service to applied science. Nay, it is perhaps not too much to say that from the Galton system of composite photography, and from the statistical results of anthropometry, to which the author refers, conclusions of considerable value for art may be drawn. But they are not those drawn by Mr. Cave Thomas, nor to be drawn by his methods; though his considerable judgment in art and his grasp of the distinction between the organic fitness of an object for its purpose and its appositeness to human taste, make this department of his investigations the least unpromising.

His quotation of the headings of the chapters in Aristotle suggests the suspicion that Mr. Thomas has not studied that author in the Greek. Otherwise the attribution to him of a system of quantitative ethics would be, despite of the great authorities for that view, less pardonable than it is. Yet to the Greeks Mr. Thomas has chosen to go in his quasi-Pythagorean glorification of quantity. H. W. B.

OUR BOOK SHELF.

The Flora of the Alps. By Alfred W. Bennett, M.A., B.Sc., F.L.S. 2 vols., with 120 coloured plates. Pp. xxii + 165; vi + 223. (London: J. C. Nimmo, 1896.)

THE Alpine wanderer will not be very grateful to Mr. Bennett and his publishers for this new "Flora of the Alps." The net is spread widely; for, in addition to the whole Swiss flora, there are included here plants from adjacent mountain districts, and also the Pyrenees. The result is a rather cumbrous affair, and yet unsatisfying in detail. The species of each genus are enumerated with very short and sometimes rather inadequate characters, so that the identifying of specimens is not always as easy as it might be. That the book is arranged according to the system of Bentham and Hooker we may regard as a welcome innovation in Alpine floras, which have been too long wedded to the irritating Linnæan system. The

© 1897 Nature Publishing Group

paper and printing are in their way admirable, but the thickness of the former does not make for portability. The custom of arranging Latin and English names under separate indices should be prohibited. It is a time-honoured survival in some Floras, but a constant source of annoyance to their users. Whether the 120 coloured plates of Alpine plants scattered through these pages will prove acceptable to purchasers of the work, we cannot say. A very large number of them are to be found in Wooster's "Alpine Plants," published a quarter of a century ago, though we have searched in vain for any indication of this fact. Then, too, some trouble was taken in the printing, and the result was not unpleasing. In Mr. Bennett's "Flora," these old plates have been mutilated, as will be obvious to any one who cares to compare the two works. In these days of modern methods and high-priced books we expect an advance, not a retrogression. We have said sufficient to show that the ideal Alpine Flora still remains to be produced. Our own view is that it should be somewhat on the lines of Hooker's "Student's Flora of the British Islands," with a separate volume of woodcuts similar to those of the well-known "Companion" to Bentham's "Handbook." If coloured plates are wanted, a draftsman of high artistic capacity and requisite botanical knowledge must be employed, whilst the printing must be of the very best. Nor would the public which travels in the Alps, and collects and examines the flowers growing there, be backward in its recognition of such a work.

First Stage Mechanics of Fluids. (The Organised Science Series.) By Prof. G. H. Bryan, Sc.D., F.R.S., and F. Rosenberg, M.A. Pp. vi + 208. (London: W. B. Clive, 1897.)

IN the pages of this book the authors have brought material together to cover that part of the subject of mechanics which is required by the Science and Art Department in the elementary examination. There are also chapters devoted to that portion of dynamics which is required by the corresponding syllabus in the mechanics of solids. The twenty-three chapters which fulfil the above-mentioned requirements are so arranged as to form an excellent elementary treatise, and also a good introduction to those who wish to make a further study of the subject. The style of treatment is similar to that adopted in other books of this series. The authors advocate strongly the importance of each student working out examples by himself, and with this idea have inserted numerous solved and unsolved problems. They have also kept down the number of formulæ, in order that the reader shall attack problems from first principles, and not trust to his memory; for those formulæ which have been inserted, proofs have been added. Numerous typical illustrations and figures are inserted in the text, thus rendering it still more serviceable to the young beginner.

Illustrative Cloud Forms. By C. D. Sigsbee. (Washington: U.S. Hydrographic Office, 1897.)

IN this book we have a collection of coloured plates, sixteen in number, illustrative of the different typical forms which clouds assume under various conditions. The classification, nomenclature, and descriptive text are derived from the "International Cloud Atlas" (Paris, 1896), but the plates are from the original paintings made for the Hydrographic Office by Mr. Rudolf Cronau. In addition to the ten standard types which are included in the classification, six further plates are devoted to illustrating certain modifications of these, such as fracto-stratus, fracto-cumulus, mamato-cumulus, &c. Each plate embraces the horizon and sufficient extension of view, so that the observer can obtain a good idea of cloud perspective. The paintings themselves have been made as accurately and as true to nature as possible, and photographs, printed exemplars, together with the artist's personal observations and knowledge of clouds, have all been brought to bear on them. Great pains have been taken by the Hydrographic Office to ensure a faithful reproduction of the originals, and we can safely say that the observer has here before him a most excellent guide for the classification of clouds, which branch of meteorology is becoming every year of more importance as a means of forecasting the weather.

Among British Birds in their Nesting Haunts, illustrated by the Camera. By Oswin A. J. Lee. Part iv. (Edinburgh: David Douglas.)

THE first three parts of this work were noticed in these pages a few weeks ago (May 13, p. 26); the photographic reproductions in the present part are as attractive as those which preceded them, and will interest every student of bird life. There are ten large plates showing the nests of the Woodcock, Oyster-catcher (two plates), Tree Pipit, Reed Bunting, Ringed Plover (two plates), Little Tern (two plates), and Jackdaw. Brief notes upon the birds and their nesting haunts accompany each plate.

More brilliant photographic pictures of the nests of birds have never been published than those which now bear testimony to Mr. Lee's skill with the camera. The work in which the pictures appear is already known to most ornithologists, and it will long receive a full measure of admiration.

The Indigenous Drugs of India; Short Descriptive Notices of the Principal Medicinal Products met with in British India. By Kanny Lall Dey, Rai Bahadur, C.I.E. Second edition. Pp. 387. (Calcutta: Thacker, Spink, and Co.)

A WORK like the present, which is intended to promote the extension of our knowledge of Indian drugs, is much to be welcomed. Indian Materia Medica presents a wide field of research for the botanist, chemist, and pharmacologist. Dr. Lall Dey's book is a useful epitome of the characters and uses of Indian indigenous drugs, and contains a great deal of valuable information. It will form an excellent introduction to larger works on the subject, such as Dymock's "Pharmacographia Indica," and Watt's well-known Dictionary.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Storm in Essex on June 24.

I AM doubtful if an English thunderstorm has ever assumed the proportions that one reached here on Thursday last. Although there is nothing new under the sun, yet there is a good deal new to each individual, and the following facts were not looked on as possibilities by me before I witnessed them on that day.

The 24th was an intensely hot day, and after much distant thunder the storm broke on us about 2.45 p.m. (while haymaking was in full swing) from the north-west. After about ten minutes of the heaviest rain, hail began to fall, and soon a terrific hurricane, accompanied by hailstones larger than hens' eggs (mixed in with others of all sizes downwards), came on and lasted for five minutes, during which most of the damage was done. After this the storm gradually abated, and in something over half-an-hour had passed away. The scene was quite unique and winter-like. The ground was quite white, and in many places the hail had drifted to a foot deep, and every ditch and depression in the ground was full of water and hail. Every

© 1897 Nature Publishing Group